A simulated improvised explosive device (IED) detonates during a realistic training scenario at the National Training Center at Fort Irwin, Califorina. IEDs are the primary cause of traumatic brain injuries among service members. (Photo courtesy of U.S. Army)

# Traumatic Brain Injuries

## Invisible Wounds of War

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*"Since 2001, between 1.9 and 3 million service members have served in post-9/11 war operations in Afghanistan and Iraq, and over half of them have deployed more than once. Many times that number of Americans have borne the costs of war as spouses, parents, children, and friends cope with their loved ones' absence, mourn their deaths, or greet the changed person who often returns."* (U.S. Veterans & Military Families, 2021, para. 1)

The invisible wounds of war such as post-traumatic stress disorder (PTSD), depression, and traumatic brain injuries (TBIs) are serious issues that have been around as long as warfare. With medical budget cuts looming, there is a healthy fear the needed care and research for these types of injuries will be on the chopping block. This article centers around TBIs and their increased prevalence throughout the U.S. military, especially due to combat-related injuries, and the urgent need to better understand them and their long-term compounding effects.

### Traumatic Brain Injuries

According to a 2015 Centers for Disease Control and Prevention (CDC) Report to Congress, "A TBI is an injury that disrupts the normal function of the brain. It can be caused by a bump, blow, or jolt to the head or a penetrating head injury. Explosive blasts can also cause TBI, particularly among those who serve in the U.S. military" (CDC, 2015, para. 1). The Department of Defense (DOD) states that from 2000 to 2016, more than 339,000 service members were diagnosed with a TBI (Collins, 2016). This



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number could actually be higher since screening relied on self-initiation, likely reducing the number of cases accurately documented (Wagner, 2016). The primary cause of this drastic increase in TBIs is the widespread use of improvised explosive devices (IEDs) in combat. These weapons create a large explosive force and while modern day protective gear does a great job of protecting service members from shrapnel, it does little to protect their brains against the concussive force of an explosion.

TBIs are often accompanied by other injuries, physical and/or mental. This is commonly referred to as polytrauma. Common polytrauma from the Iraq and Afghanistan wars included PTSD and depression along with TBIs (Ord et al., 2020). In a recent clinical study of more than 16,000 veterans with deployments to Iraq or Afghanistan, nearly 25% suffered from PTSD, TBI, and chronic pain, more than any other singular condition or combination (Adams et al., 2019). This triad of PTSD, TBI, and chronic pain has also been associated with increased suicide rates among veterans.

## The Problem

According to Boston University, "The U.S. veteran suicide rate per 100,000 has outpaced that of the public and reveals an increasingly severe crisis. The VA's 2020 National Veteran Suicide Prevention Annual Report reveals the suicide rate of veterans overall and adjusted for age and sex is 1.5 times that of the general population" (Suitt, 2021, p. 5).

The major concern is that with projected DOD budget cuts and a reduction in TBI diagnoses due to lower combat deployment rates, TBI treatment development and research will be at risk. Currently, in an effort to reduce spending, the DOD plans to close several medical treatment facilities and cut 12,801 health care provider positions (Jowers, 2021b; Maucione, 2020). This will undoubtedly affect both medical research and treatments across the board, not just for TBIs.

Elizabeth Kirkpatrick, physical therapist for the Fort Drum Traumatic Brain Injury (TBI) Clinic, uses a model of the inner ear to demonstrate how concussions can cause inner ear damage which may result in dizziness, anxiety, depression, moodiness, balance problems and irritability at Fort Drum, New York, Feb. 27, 2019. (U.S. Army photo by Warren W. Wright Jr.)

U.S. Army Sgt. Eric Puglio with 41st Field Artillery Regiment, 1st Armored Brigade, bandages Sgt. Derrick Rouse's head after he received a simulated injury during a training exercise at the Joint Multinational Readiness Center in Hohenfels, Germany, Oct. 28, 2015. (U.S. Army photo by Staff Sgt. Carol A. Lehman)

Rep. Derek C. Kilmer said:

> *"Unfortunately, we've seen some of these changes come at the expense of improving health care outcomes for the folks that I represent, including veterans and active-duty military and their families. We've seen them lose access to quality care, so I'm concerned about the ability of local civilian providers to adequately cover the gaps in care."* (Jowers, 2021a, para. 5)

While TBIs might not be as hot a topic in the news as they once were, it is still vital to continue treating and researching these injuries. As recent as 2020, 50 U.S. troops were diagnosed with TBIs after an Iranian missile attack on Al-Asad Airbase (Choi, 2020).

## Solution

More funding and research should be poured into recognizing and treating these "invisible wounds of war." According to Terri Tanielian, researcher and policy analyst at the RAND Corporation, several developments occurred, and more funding would only improve care and treatment:

- Technology is progressing and being used to treat and engage service members, veterans and their families. This includes tele-health access where patients can get access to providers over any distance, as well as app-based therapeutic tools.
- Health care providers are now better educated and equipped to deal with the invisible wounds of war and deliver better, more thoroughly researched and effective therapies.
- More mental health care providers are available at primary care facilities, providing rapid access to specialty care.
- Non-traditional therapies such as acupuncture are being accepted and adopted (Tanielian, 2016).

## Conclusion

While the U.S. has made great efforts to recognize and treat TBIs, it needs to continue to research and provide treatment to its service members and veterans. In the technology-driven battlefields of the future, with the likelihood of Soldier injuries increasing exponentially, learning how to treat physical and invisible wounds will be more important than ever. ■

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